

Patent US 210  
Edwards Ref: RMI-5726  
(formerly 260/008)

**IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A filter, comprising:  
a tubular member;  
a shaft extending through the tubular member;  
an expansion frame mounted on the distal end of the shaft, the expansion frame expandable between a contracted condition and an expanded condition, the expansion frame including comprising a flexible ring;  
a flexible cantilever beam configured to that slideably extend extends from a distal end of the shaft and bisects the expansion frame, and contacts the expansion frame at a distal end of the flexible cantilever beam, the flexible cantilever beam including a wire having a weakened region; and  
a filter mesh attached to the expansion frame.
2. (Original) The filter of claim 1, wherein the flexible cantilever beam includes a flexible hinge.
3. (Original) The filter of claim 1, wherein the flexible cantilever beam includes a flexible spring.
4. (Canceled)
5. (Original) The filter of claim 1, wherein the flexible cantilever beam comprises a nitinol tube of generally cylindrical shape.
6. (Currently Amended) The filter of claim 1, wherein the flexible cantilever beam is constructed from a composite of materials.
7. (Currently Amended) The filter of claim 1 claim 6, wherein the flexible cantilever beam is constructed of bare wire, plastic tube, and metal outer sheath.

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8. (Currently Amended) A medical device for filtering embolic material, comprising:

a cannula having a proximal end, a distal end, and a lumen therebetween, the lumen communicating with a port at the distal end;

a port on an outer surface of the cannula and located adjacent a distal region of the cannula, the port having a passage extending distally and communicating with a distal opening in the port;

a filter removably insertable through the passage of the port, the filter including comprising a flexible tubular member, a flexible shaft greater than 50 cm extending through the flexible tubular member, and an expansion frame mounted on the distal end of the shaft, the expansion frame expandable between a contracted condition and an expanded condition, the expansion frame deployable through the distal opening of the passage of the port, a distal end of the shaft insertable through the passage of the port while a proximal end of the shaft extends outside the port; and

a filter mesh attached to the expansion frame.

9. (Currently Amended) The device of claim 8, further comprising a wherein the filter cartridge providing provides a hemostatic seal between the expandable filter and the port.

10. (Original) The device of claim 8, wherein the expansion frame comprises a plurality of struts.

11. (Original) The device of claim 8, wherein the cannula further includes a suture flange.

12. (Original) The device of claim 8, wherein the distal region of the cannula is at approximately a 90° angle relative to the proximal region.

13. (Original) The device of claim 8, wherein the proximal end of the

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cannula is adapted for attachment to a bypass-oxygenator.

14. (Original) The device of claim 8, wherein the distal opening of the port is separate from the lumen of the cannula and the distal port on the cannula, and extends into a lumen of a vessel during use.

15-17. (Canceled)

18. (Currently Amended) A method for filtering blood, comprising the steps of:

providing a tubular member, a shaft extending through the tubular member, an expansion frame mounted on the distal end of the shaft, a flexible cantilever beam that slideably extends from a distal end of the shaft and bisects the expansion frame, and is bonded to the expansion frame at a distal end of the flexible cantilever beam, the flexible cantilever beam including a wire having a weakened region, and a filter mesh attached to the expansion frame;  
inserting a cannula into a vessel;  
inserting the tubular member into a port on the cannula;  
advancing the filter mesh into the vessel;  
deploying the filter mesh within the vessel; and  
removing the filter mesh from the vessel, wherein embolic material is captured by the filter.

19-20. (Canceled)

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21. (Currently Amended) A method for filtering blood, comprising the steps of:

providing a cannula having a proximal end, a distal end, a lumen therebetween, and a port at the distal end, located adjacent a distal region of the cannula,

providing a filter cartridge removably insertable through the passage of the port, the filter cartridge including comprising a flexible tubular member, a flexible shaft greater than 50 cm extending through the tubular member, and an expansion frame mounted on the distal end of the shaft, and a filter mesh attached to the expansion frame;

inserting the cannula into a vessel;

inserting the filter cartridge into the port on the cannula;

advancing the filter mesh through the passage into the vessel;

deploying the filter mesh within the vessel; and

removing the filter mesh from the vessel, wherein embolic material is captured by the filter mesh.

22-23. (Canceled)

24. (Original) A medical device, comprising:

a cannula having a proximal end, a distal end, and a lumen therebetween, the lumen communicating with a port at the distal end; and

a port on an outer surface of the cannula and located adjacent a distal region of the cannula, the port having a passage extending distally and communicating with a distal opening in the port, wherein at least a portion of the passage extends alongside the cannula,

wherein the cannula lumen is circular and the passage is crescent-shaped in a cross-section taken through the portion of the passage that extends alongside the cannula.

25-26. (Canceled)

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27. (Allowed) A filter, comprising:

a tubular member; and

an expansion frame mounted on the distal end of an elongate member that slideably extends through the tubular member, the frame expandable between a contracted condition and an expanded condition, the frame comprising a cantilever beam that slideably extends from a distal end of the tubular member and bisects the frame, and a flexible ring that is bonded at one end to an end of the cantilever beam, circles twice around the circumference of the frame, and is bonded at another end to the end of the cantilever beam.

28. (Canceled)

29. (Currently Amended) A filter, comprising:

a tubular member; and

an expansion frame mounted on the distal end of an elongate member that slideably extends through the tubular member, the expansion frame expandable between a contracted condition and an expanded condition, the expansion frame including comprising a flexible ring having a first point that is pivotally bonded to the elongate member and having a second point that is pivotally bonded to the elongate member.

30. (Canceled)

31. (Original) A filter, comprising:

a tubular member; and

an expansion frame mounted on the distal end of an elongate member that slideably extends through the tubular member, the expansion frame expandable between a contracted condition and an expanded condition, the expansion frame including comprising a flexible ring that is bonded to the elongate member, the flexible ring being formed of a thicker and stiffer material near its point of attachment to the elongate member and a thinner and more flexible material farthest from its point of attachment to the elongate member.

32. (Canceled)